**Java Lecture 7**

**Java - Introduction to Programming**

**Lecture 7**

**Methods/Functions**

* A function is a block of code that performs a specific task.

**Why are functions used?**

* If some functionality is performed at multiple places in software, then rather than writing the same code, again and again, we create a function and call it everywhere. This helps reduce code redundancy.
* Functions make maintenance of code easy as we have to change at one place if we make future changes to the functionality.
* Functions make the code more readable and easy to understand.

**-The syntax for function declaration is :-**

* return-type function\_name (parameter 1, parameter2, …… parameter n){ //function\_body
* }

**return-type**

* The return type of a function is the data type of the variable that that function returns.
* For eg - If we write a function that adds 2 integers and returns their sum then the return type of this function will be ‘int’ as we will return a sum that is an integer value.
* When a function does not return any value, in that case the return type of the function is ‘void’.

**function\_name**

* It is the unique name of that function.
* It is always recommended to declare a function before it is used.

**Parameters**

* A function can take some parameters as inputs. These parameters are specified along with their data types.
* For eg- if we are writing a function to add 2 integers, the parameters would be passed like –

int add (int num1, int num2)

**main function**

The main function is a special function as the computer starts running the code from the beginning of the main function. Main function serves as the entry point for the program.

**Example :**

class Main {

//A METHOD to calculate sum of 2 numbers - a & b

public static void sum(int a, int b) {

int sum = a + b;

System.out.println(sum);

}

}

public static void main(String[] args) {

int a = 10;

int b = 20;

sum(a, b); // Function Call

}

}

**Qs. Write a function to multiply 2 numbers**.

import java.util.\*;

class Functions {

//Multiply 2 numbers

public static int multiply(int a, int b) {

return a\*b;

}

public static void main(String args[]) {

Scanner sc = new Scanner(System.in);

int a = sc.nextInt();

int b = sc.nextInt();

int result = multiply(a, b);

System.out.println(result);

}

}

**Qs. Write a function to calculate the factorial of a number.**

import java.util.\*;

public class Functions {

// public static int calculateSum(int a, int b) {

// int sum = a + b;

// return sum;

// }

// public static int calculateProduct(int a, int b) {

// return a \* b;

// }

public static void printFactorial(int n) {

//loop

if(n < 0) {

System.out.println("Invalid Number");

return;

}

int factorial = 1;

for(int i=n; i>=1; i--) {

factorial = factorial \* i;

}

System.out.println(factorial);

return;

}

public static void main(String args[]) {

Scanner sc = new Scanner(System.in);

int n = sc.nextInt();

printFactorial(n);

}

}

**Qs. Write a function to calculate the product of 2 numbers.**

import java.util.\*;

public class Functions {

// public static int calculateSum(int a, int b) {

// int sum = a + b;

// return sum;

// }

public static int calculateProduct(int a, int b) {

return a \* b;

}

public static void main(String args[]) {

Scanner sc = new Scanner(System.in);

int a = sc.nextInt();

int b = sc.nextInt();

System.out.println(calculateProduct(a, b));

}

}

**Homework Problems**

1.Make a function to check if a number is prime or not.

2.Make a function to check if a given number n is even or not.

3.Make a function to print the table of a given number n.

4.Read about Recursion.